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UNITED STATES DEPARTMENT OF AGRICULTURE
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Why Tuberculosis in Livestock Is Increasing

More than 40 years after the beginning of the campaign to eliminate tuberculosis from livestock on a national basis, cattle are still being branded with a capital "T" and shipped as reactors. More important is that every year since 1954 there has been a gradual increase in this costly disease.

Back in 1918, when the present program first got underway, tuberculosis was found in nearly 5 percent of all cattle tested.

The previous year, nearly 50,000 beef carcasses had been condemned because they were unfit for human consumption. And Federal meat inspectors had found nearly 200,000 carcasses infected with tuberculosis in addition to those found and condemned as a result of tuberculin testing.

Throughout that long span of years, by following the State-Federal cooperative tuberculosis program of testing, slaughtering reactors, cleaning and disinfection, and quarantine, farmers made excellent progress in reducing the rate of infection. In 1940, the 48th State became a modified-accredited area. This meant that less than 0.5 percent of the cattle in each State were infected.

Increase in Reactors

During the next 12 years the number of reactors found continued to drop until, in 1952, the disease hit a low point of 0.11 percent of all animals tested, or 11 animals in every 10,000.

What has happened since 1952? During 1953 and 1954 there was no change, the percentage of reactors found remained the same as in 1952. But in 1955 the break came. The number of reactors started to climb and increased every year until, in 1959, a total of 23 of every 10,000 animals tested were tagged as reactors.

Why this marked rise in the number of tuberculous cattle? A good many factors have played a part in the problem.

First of all, World War II came along, with its shortage of veter-

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inarians, shortage of gasoline and tires, and shortage of help on the farm. As a result, in some cases standards were ignored, and retesting lagged in a good many States. In others, in tests of a county, herds were skipped. At the same time, livestock population was growing—and this meant an increase in the number of susceptible animals.

Tuberculin testing still lags in many areas. Herd owners are still having flareups of the disease, and some herds become badly infected before they are spotted. As a matter of fact, in 1958, a total of 6.5 percent of all reactors found were located as a result of finding some infected animals at slaughterhouses, tracing them back to the farms of origin and testing the herd.

During and after the war, the incidence of infection appeared to be steadily dropping, and interest in tuberculosis continued to wane. Most people felt the disease had been licked.

Public interest shifted from tuberculosis to brucellosis and other diseases. As tuberculosis received less and less emphasis, funds for research, testing, and education slowly dwindled while costs rose. What had been a well-organized eradication program became simply an effort to hold the line, to control instead of eradicate the disease.

Since the war years there has been a tremendous increase in the movement of cattle. More and better trucks, better highways, changing patterns of livestock production have all played a part.

Auction markets and sales rings helped to stimulate this movement of livestock and, in some cases, this helped to spread the disease.

Throughout this period another major problem developed. Farmers thought the battle to wipe out tuberculosis was over and failed to show much concern when their herds weren't tested regularly.

This was true not only of farmers, but also of livestock sanitary officials and veterinarians whose job was to help find the "hot" herds. Some of them had little or no experience with tuberculosis. Others were lax in their testing. In some cases they failed to properly apply the tuberculin test.

What has happened? The answer is simple: The number of reactors has almost doubled in the past 4 years.

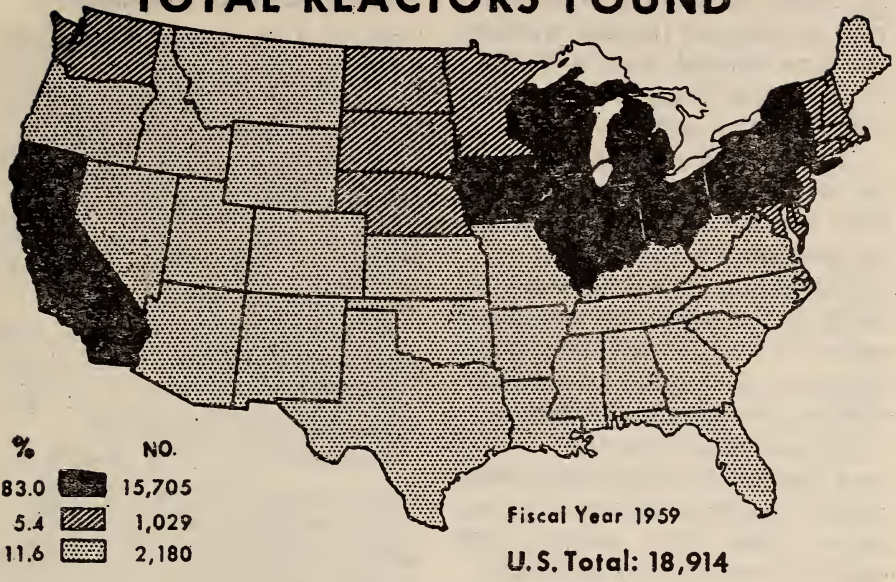
Fewer Accredited Herds

In 1937, there were 275,000 tuberculosis-free accredited herds in the United States. In 1959, there were only 52,946.

In 1959, 27 States showed an increase in the number of tuberculosis reactors over 1958. In some States the number was double or triple that for the previous year.

Of the total of more than 8 million cattle tested in 1959, 45 percent were tested from the nine top dairy States of New York, Pennsylvania, Ohio, Michigan, Wisconsin, Indiana, Illinois, Iowa, and California. Even more alarming for dairymen is the fact that 83 percent of all reactors found in 1959 turned up in these States.

TOTAL REACTORS FOUND



State	*Total cattle tested*	*Percent reactors*
New York	411, 697	0. 12
Pennsylvania	526, 668	. 13
Illinois	298, 204	1. 12
Indiana	215, 040	. 11
Ohio	352, 879	. 28
Michigan	374, 897	1. 58
California	704, 805	. 29
Wisconsin	716, 543	. 66
Iowa	116, 548	. 19

States shown in black on the map above conducted only 45 percent of the tuberculosis tests in 1959, but produced 83 percent of all reactors found in the country. Chart shows total cattle tested in these nine States and percent of reactors found. States conducting the remainder of tuberculin tests showed higher or lower percentages of reactors than these nine States. However, since 15,705 of the total of 18,914 reactors were found in these nine States, they are considered major problem areas.

Figures covering a 7-year period show that 7,901 reactors were found as a result of tests made in herds to which carcasses of infected animals found during slaughter were traced. Of this number 5,538, or 70 percent, were found in this same group of States.

Why the extremely high rate of infection in these nine States compared with the rest of the country?

To begin with, infection rates have always tended to be higher in these States than, for example, in primarily beef-producing areas. One important factor is the relatively high concentration of animals, many of which are kept in confined quarters where disease can be more easily spread.

In addition, in most of these States there's a more diversified type of farming. Many dairymen also have other types of livestock on the farm—hogs, sheep, horses, and poultry, for example.

In many cases, dairymen are quite likely to have hired help on

the farm. This hired help, along with members of the family, often spend considerable time in milking, feeding, cleaning, and working with the dairy herd.

What does this diversification in livestock and close contact with humans have to do with the increase in tuberculosis?

Simply this: Tuberculosis may be easily spread from one species of animal to another, and few species, either warm- or cold-blooded, have absolute resistance to the disease.

For example, the organism which most commonly causes tuberculosis in cattle is also capable of infecting swine, dogs, cats, parrots, and canaries, as well as human beings.

The avian tubercle bacillus, the type which affects poultry, can produce the disease not only in sheep and swine, but in cattle as well. Tuberculosis in humans can also be transmitted to cattle, swine, dogs, and parrots.

The fact that these three forms of tuberculosis affect more than one species of animal creates a problem when it comes to determining the type of tuberculosis an animal has.

For example, the tuberculin test used to detect bovine tuberculosis in cattle also sometimes responds to other forms of tuberculosis, as well as to paratuberculosis (Johne's disease), and possibly other causes.

How important are these problems? Does it mean we should discard the gains made in the battle against tuberculosis on the off-chance that a better test may be developed?

New Research Projects

First of all, disease eradication officials agree the problem is an important one. In an effort to learn more about it, the U.S. Department of Agriculture recently established cooperative field and laboratory research projects in Michigan, Utah, California, and Wisconsin. Further studies are planned.

In the meantime, research men emphasize, while it isn't perfect, the tuberculin test is one of the best diagnostic tests yet devised.

They point out it is exactly the same test that was used to help reduce infection from 5 percent of all cattle tested in 1918 to 0.11 percent in 1952. Furthermore, they feel, if the test is properly applied and used in conjunction with other procedures, even greater progress can be made.

In some areas cattlemen, and even a few veterinarians, have been led to believe reactors to the tuberculin test that fail to show visible lesions of tuberculosis when examined at the slaughterhouse don't have the disease.

This can happen, of course. No test yet devised for detecting disease in either humans or animals is perfect. But further laboratory tests have shown, even though no lesions were found, animals that reacted to the tests were infected.

Keep in mind the fact that no matter how careful an examination is made, tiny lesions can be missed. Furthermore, many animals fail to show lesions because infection has not progressed to the point where lesions have formed.

What can dairymen and livestock sanitary officials do to help overcome those problems and eradicate tuberculosis once and for all?

Perhaps most important of all is to remember infected cattle pose a serious threat to the health of everyone—the farmer, his family, and the public. One big step the farmer can take in protecting himself and his family, as well as the public, is to make sure everyone living or working on the farm receives a periodic medical examination. That way any human infection may be quickly detected.

The next line of offense is to make sure all animals in every herd are tuberculin tested at regular intervals.

If reactors are found, dispose of them immediately. Then clean up and disinfect the premises carefully. Make sure retests of the rest of the herd are made when they're due. If replacements are bought, be sure they come from an accredited herd, or have them tested before parting with any money.

If there are poultry, swine, or other livestock on the farm, don't let them have the run of the place. And, above all, keep them away from all cattle.

Dispose of Old Birds

Poultry should be kept out of barns and feed lots. Dispose of all birds at the end of the first laying season—older birds are more likely to be infected with avian tuberculosis than younger ones. As a result, older birds are the ones most likely to pass infection on to other livestock.

When cattle are to be tuberculin tested, have them properly confined and be on hand to work with the veterinarian to get an accurate test. If reactors are found, give the veterinarian all possible information which might help him to find the source of infection.

What can—and is—being done on a national basis to check and eventually eradicate tuberculosis in livestock?

First of all, both the livestock industry and veterinary profession must become tuberculosis conscious. Everyone must face up to the fact that tuberculosis not only is still with us, but is on the increase.

Must Meet Standards

All areas must meet requirements set up for eradicating the disease. In recent years these standards have not been met. In many cases there has been a tendency to do as little as possible to retain a modified-accredited status.

However, this situation is now being improved in most areas. For example, in November 1957, a total of 347 counties were overdue for testing. By July 1959, this number had been reduced to 136, and tests of these counties are scheduled to be completed soon.

All veterinarians applying the tuberculin test should follow proper techniques in testing to assure uniformity of results. Steps should be taken by State and local livestock sanitary officials and veterinary groups to make sure those responsible for testing receive proper instruction.

To help standardize these testing procedures veterinary schools, with the help of State and Federal officials, are placing even greater emphasis on tuberculosis.

When infected herds are found, every effort must be made to find the origin of infection. Herd environment and history must be more carefully studied. When infected animals are found at time of inspection at the slaughterhouse, they must be traced to the herd of origin as rapidly as possible.

To speed the process of tracing these animals, a simple and uniform method of trace-back is needed. Efforts to develop this type of tagging system have been underway for several years in more than two-thirds of the States. Such a plan is now being tested on a limited basis in connection with the State-Federal cooperative brucellosis eradication program.

Strict attention must be given to cleaning, disinfection, and quarantine procedures. Retests of reactor herds must be carried out promptly and carefully.

Research projects must be continued and expanded to investigate problems involving tuberculosis in all species, to learn more of the part they play in the tuberculosis eradication program. In addition, more laboratories are needed to handle the increased need for diagnostic and investigational studies.

Much greater effort must be made to eradicate tuberculosis in poultry and swine. As with cattle, infected swine found in the slaughterhouse must be traced back to the farm from which they came.

Livestock producers and sanitary officials must make sure all procedures are followed and all regulations, both State and Federal, are strictly enforced in accrediting herds and areas in order to reestablish confidence in the designation "modified-accredited area."

This is particularly true of those areas that are primarily "sellers" of livestock. Buyers in other States and areas have every right to expect clean cattle. It is the responsibility of cattlemen and sanitary officials—as well as dealers, auction market operators, and others—to make sure cattle moving both interstate and intrastate are properly tested and tuberculosis-free.

TB Conferences Held

To emphasize the importance of all these factors, three major conferences on the subject of tuberculosis have been held in the past 2 years in Michigan, Wisconsin, and Kansas.

National authorities on tuberculosis research, education, and regulatory problems reviewed program procedures and testing techniques, and the effects of human and avian tuberculosis, as well as paratuberculosis (Johne's disease), on the diagnostic tests used to detect bovine tuberculosis.

These are some of the hurdles which must be overcome—and some of the things being done to overcome them—if tuberculosis is to be

wiped out once and for all. Today, this disease is still a major public health problem. For that reason, it's doubly important that everyone buckle down to eliminate the last trace of the disease from every farm animal on every farm in the country. There's every reason to believe, with the tools we now have, that goal can be reached.

(Much of the preceding information first appeared in the November 25, 1959, issue of Hoard's Dairyman. This material was prepared by Dr. R. J. Anderson, Director, Animal Disease Eradication Division, Agricultural Research Service, U.S. Department of Agriculture.)

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